

CLAIMS

What is claimed is:

1. A portable air filtration system for filtering air, said filtration system
5 comprising:
 - a filter housing including an air inlet and an air outlet and defining a filtration chamber between said air inlet and said air outlet;
 - an intake fan disposed within said filter housing for moving the air through said filtration chamber by drawing the air in through said air inlet and dispelling the air out
10 through said air outlet;
 - an ionizing mechanism disposed between said intake fan and said air outlet for ionizing particles within the air to a negative charge;
 - a filter media disposed between said ionizing mechanism and said air outlet for entrapping the particles; and
 - 15 an electrode disposed between said ionizing mechanism and said filter media to establish an electric field between said ionizing mechanism and said electrode adjacent to said filter media, wherein said electrode is electrically-connected to ground and to said filter media for dissipating the negative charge of the particles entrapped within said filter media.
- 20 2. An air filtration system as set forth in claim 1 wherein said electrode is spaced from said ionizing mechanism such that said electric field has a distance defined between said electrode and said ionizing mechanism that ranges from 35 to 60 mm.
3. An air filtration system as set forth in claim 2 wherein said distance ranges from 40 to 50 mm.
- 25 4. An air filtration system as set forth in claim 1 wherein said filter media comprises an upstream side facing said air inlet and a downstream side facing said air outlet with said electrode being electrically-connected to said upstream side of said filter media for dissipating the negative charge of the particles entrapped with said filter media through said upstream side.
- 30 5. An air filtration system as set forth in claim 1 further comprising a pre-filter disposed between said air inlet and said intake fan.

6. An air filtration system as set forth in claim 1 wherein said filter housing is plastic.
7. An air filtration system as set forth in claim 1 wherein said filter media is removable from said filter housing.
- 5 8. An air filtration system as set forth in claim 1 wherein said air inlet is further defined as inlet louvers defined within said filter housing.
9. An air filtration system as set forth in claim 1 wherein said air outlet is further defined as outlet louvers defined within said filter housing.
- 10 10. An air filtration system as set forth in claim 8 wherein said air outlet is further defined as outlet louvers defined within said filter housing.
11. An air filtration system as set forth in claim 10 wherein at least one of said inlet louvers and said outlet louvers are adjustable.
12. An air filtration system as set forth in claim 1 wherein said filter media is further defined as a woven filter media.
- 15 13. An air filtration system as set forth in claim 1 wherein said filter media is further defined as a non-woven filter media.
14. An air filtration system as set forth in claim 1 wherein said filter media is further defined as a cellular filter media.
- 20 15. An air filtration system as set forth in claim 1 wherein said electrode is further defined as a conductive grid.
16. An air filtration system as set forth in claim 15 wherein said conductive grid is adhesively bonded to said filter media.
17. An air filtration system as set forth in claim 15 wherein said conductive grid is plastic.
- 25 18. An air filtration system as set forth in claim 15 wherein said conductive grid is metallic.
19. An air filtration system as set forth in claim 18 wherein said conductive grid is aluminum.
- 30 20. An air filtration system as set forth in claim 4 wherein said electrode is further defined as a conductive grid electrically-connected to said upstream side of said filter media.

21. An air filtration system as set forth in claim 1 wherein said ionizing mechanism is further defined as a plurality of ionizing needles.

22. An air filtration system as set forth in claim 21 wherein said plurality of ionizing needles is further defined as a first, second, third, and fourth ionizing needle.

5 23. An air filtration system as set forth in claim 1 further comprising a power supply electrically-connected to said ionizing mechanism.

24. An air filtration system as set forth in claim 1 further comprising a handle integrated into said filter housing to enhance portability of said air filtration system.